

Application Serial No.: 09/731,640
Attorney Docket No.: 0190144

List of Claims:

1. (currently amended) An imaging system comprising:

a first imager configured to capture an image of an object in a spatial domain and generate first spatial-domain image data, wherein the object is illuminated by an incoherent light source;

a spatial light modulator configured to receive the first spatial-domain image data and a beam of coherent light, and generate diffracted light rays;

a transform lens configured to transform the diffracted light rays into a diffraction pattern;

an a second imager having an array of photocells, where each photocell produces an electrical response to light exposure, and the electrical responses of the array of photocells together represent wherein the second imager is configured to capture the diffraction pattern in a spatial frequency domain and generate spatial frequency-domain image data representing an object illuminated with an incoherent light source; and

an image processor that receives the spatial frequency-domain image data from the second imager and transforms the spatial frequency-domain image data into a second spatial-domain image data, thereby reconstructing an image of the object.

2. (currently amended) The imaging system of claim 1, where the spatial frequency-domain image data contains noise, the system further comprising a filter that

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detects and removes the noise before the system transforms the spatial frequency-domain image data into second spatial-domain image data.

3. (currently amended) The imaging system of claim 1, further comprising a user interface that displays both the second spatial-domain image data and the diffraction pattern.

4. (currently amended) The imaging system of claim 1, ~~further comprising an optical lens placed between a spatial representation of an image object and the imager,~~ wherein the optical transform lens performing performs an approximate Fourier transform on the diffracted light rays light emanating from the spatial representation of the image object toward the imager.

5-14. (cancelled)

15. (currently amended) A method that minimizes point defects in an image, comprising:

illuminating an object using an incoherent light source;

capturing a first image of the object in a spatial domain;

generating first spatial-domain image data;

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using a spatial light modulator configured to receive the first spatial-domain image data and a beam of coherent light, and generate diffracted light rays;
transforming the diffracted light rays into a diffraction pattern;
capturing a the diffraction pattern in a spatial frequency domain of an image object
~~illuminated by an incoherent source;~~
producing ~~digital~~ spatial frequency-domain image data corresponding to the
captured diffraction pattern ~~of the object~~; and
converting the spatial frequency-domain image data into a second spatial domain
image data, thereby reconstructing an image of the object.

16. (original) The method of claim 15, further comprising detecting and removing noise from the captured spatial frequency-domain image data.

17. (currently amended) The method of claim 15, further comprising transferring the spatial frequency-domain image data to an image processor, the image processor inverse Fourier transforming the frequency-domain image data into a the second spatial domain image data.

18. (currently amended) The method of claim 15, ~~further comprising placing~~
wherein the transforming is achieved by a transform lens between an image object and the

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~~digital imager, the transform lens performing an approximate Fourier transform on the~~
diffracted light rays light traveling between the object and the digital imager.

19. (currently amended) The method of claim 15, further comprising storing the
second spatial-domain image data in digital memory.

20. (currently amended) The method of claim 15, further comprising displaying
both the second spatial-domain image data and the diffraction pattern.

21-22. (cancelled)